during the last nine months with great judgment and success. It is extremely fortunate that we had some such organization to prevent the so-called complete and disorderly liquidation, which some interests seemed to think absolutely essential to better times.

EDUCATION THE REMEDY FOR OVER-EXPANSION AND OVER-CONTRACTION

It is evident that the banker and the business man are in a sense trustees of the prosperity of the nation, in that their combined acts, if unchecked, may bring about hard times and unemployment to thousands of men who have no power of decision in starting a movement which will result so disastrously. I say they have no decision in making the start, although, after it is about half way along, the wage earners have much to say when they begin to buy heavily, and, feeling higher and rising cost of living, begin to demand more pay, which, in turn, adds to the price of the manufactured articles.

On the other hand, in times of over-contraction, the business man and the banker have often lost their power of direction and voluntary decision. They are controlled almost entirely by the general populace, which refuses to buy, and by the wage earner, who will not consent to a reduction of his wages commensurate with the changed cost of living and the new world conditions brought about by the collapse of the boom. It seems to me, therefore, that education is needed on both sides, first to prevent expansion from becoming *over*-expansion and contraction from becoming *over*-contraction. Sound common sense and experience will finally be the teachers if expert economists are not.

Currency Expansion and Contraction

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AS is well known, the Federal Reserve System is the result of the financial panic of 1907. At least, it was this financial crisis that hastened the establishment of a more rational system of issuing currency than had previously prevailed in the United States. To be sure, there had been earlier movements to make possible an automatic expansion and contraction of our currency. As far back as 1902, and probably earlier, there are to be found discussions in regard to our currency at every convention of the American Bankers Association. Long before the Federal Reserve Act was thought of, it was clear to any thinking banker that our whole currency system needed a thorough revision. In 1902 Charles N. Fowler, Charles G. Dawes and Horace White made addresses dealing with the currency problem at the convention of the American Bankers Association. The chief difference of opinion in that day was between the advocates of a highly taxed emergency currency and those of a low taxed credit currency, or, as General Dawes spoke of it, "a system of asset currency subject only to a nominal tax." As a result of this agitation, there was appointed at that meeting, held in New Orleans, a special Currency Committee, a forerunner of the Currency Commission which still exists. The Currency Committee ap-

pointed in 1902 made a report at the meeting of the American Bankers Association held in San Francisco in 1903, in which it favored an emergency circulation subject to a heavy tax, which, it was hoped, would insure the redemption of this currency as soon as the emergency which had called it forth had passed. Discussions continued until the agitation finally led to the appointment by the Association at its convention in St. Louis, October 16–9, 1906, of the present Currency Commission, of which Mr. A. B. Hepburn of New York has been Chairman and the writer of this article, Vice-Chairman, ever since its creation. Its first report appears (pages 100 and following) in the Appendix of the Proceedings of the Thirty-Third Annual Convention of the American Bankers Association, held at Atlantic City, September 24–7, 1907. Practically everything that now appears in the Federal Reserve Act was foreshadowed in the discussions of this Commission.

LESSON OF MONEY PANIC OF 1907

Probably these discussions would have continued to be haphazard and without practical result had it not been for the financial panic of 1907. There is no need to go into the history of this panic in this article. Its interest to us is due to the fact that it made clear to the public at large what had long been known to experienced bankers, that the country was liable at any moment to suffer all the evils of business depression, not because of any inherent difficulties in the business situation but owing solely to the faulty mechanism which prevented the expansion and contraction of the circulating media in accordance with momentary requirements. The panic of 1907 was due simply to the fact that the government was unable to issue a sufficiently large amount of paper money to tide over a temporary situation, and, owing to this inability, a number of banks failed, and perfectly solvent corporations and business firms found themselves in financial difficulties without in the least being guilty of any commercial sins of commission or omission. The situation had to be tided over by extra legal methods, such as the issuance by clearing houses of certificates which really took the place of ordinary currency and were, therefore, a direct violation of the provisions of the Federal Constitution. A recent writer has summarized the condition as follows:

> The chief defect of the old national banking system was its decentralization resulting in scattered bank reserves. Even though the national banks of the United States possessed enormous aggregate cash reserves yet, before the establishment of the Federal Reserve System, those reserves were ineffective. There was no method of mobilizing cash for use where and when it was needed. No responsible body was empowered to adopt or carry out discount or other policies to avoid a financial panic or to handle a panic when it occurred. Other countries had economic crises; the United States not only had crises but financial panics as well. This is the reason that under the national banking system the United States was called "an international financial nuisance."[1]

As a result of the experiences of 1907, public opinion compelled Congress to take some action, and it appointed the National Monetary Commission. Thereafter, the Currency Commission of the American Bankers Association acted largely in an advisory capacity to the governmental body with which it held frequent conferences in Washington. Out of this grew, first, the Aldrich-Vreeland Act, and, later on, the Federal Reserve Act.

[1] Persons, "Basis for Credit Expansion." Harvard Committee on Economic Research. Vol. II, *p.* 21.

CURRENCY FUNCTION OF RESERVE SYSTEM

The Federal Reserve Act, in the first instance, is designed not so much for the purpose of compelling banks to keep certain fixed reserves and the like, as, primarily, to meet the changing requirements for currency, a function which the large central banks of Europe have performed for their respective countries for many decades. It is difficult to see how we could have weathered the storm of the War and the years immediately following without some such arrangement as that provided by the Federal Reserve System. It is a well known fact that the banks have been and are carrying many industries which would have been forced to the wall, injuring our whole credit structure, had it not been for the fact that the banks in turn have been able to obtain needed currency from the Federal Reserve Banks by rediscounting notes. Since banks are compelled to meet the demands made upon them by payment of currency over their counters, they would otherwise have reached the end of their resources almost immediately, owing to the tremendous expansion of business caused by the War. They would, therefore, in order to meet their own liabilities, have been compelled to call upon business houses to pay off their loans and, if necessary, would have had to demand the liquidation of perfectly solvent business enterprises in order to obtain the needed repayment. The banks, fortunately for our whole country, have not needed to resort to such extreme measures, owing to the rediscount privileges inaugurated by the Federal Reserve System, with which rediscount privileges our currency system is closely connected.

The Federal Reserve Act provides that any Federal Reserve Bank may issue Federal Reserve notes based on collateral security consisting of notes, drafts, bills of exchange or acceptances acquired either by purchase in the open market or through the rediscount privileges exercised by its member banks. The Bank is compelled, in addition, to maintain reserves of gold of not less than forty per centum against its Federal Reserve notes in actual circulation. This gold reserve held against Federal Reserve notes may fall below forty per centum, in which case "the Federal Reserve Board shall establish a graduated tax of not more than one per centum per annum upon such deficiency until the reserves fall to thirty-two and one-half per centum, and when said reserve falls below thirty-two and one-half per centum, a tax at the rate increasingly of not less than one and one-half per centum per annum upon each two and one-half per centum or fraction thereof that such reserve falls below thirty-two and one-half per centum."[2]

It is interesting to note that practice has shown that this check provided by the Act has proved to be entirely sufficient under the most exacting and trying conditions. Though there have been times within the last few years when the net reserve of gold against Federal Reserve notes outstanding was dangerously close to the legal minimum required, the ratio never actually fell below forty per centum.

It is under these provisions that the so-called expansion and contraction of our currency has taken place and is taking place. The total circulation of currency of all kinds in the country on September 1, 1921, was $4,672,030,-221, of which more than one-half was represented by Federal Reserve notes. While at the beginning of this year the total circulation of all currency amounted to $5,500,702,153, the

[2] Federal Reserve Act. Sec. 11 (c).

changes were almost entirely in the item of Federal Reserve notes, since the rest of the currency is more or less constant.

CURRENCY INFLATION AND DEFLATION

Before going further into this question of expansion and contraction of our currency, it is necessary to distinguish sharply between currency expansion and currency inflation. A recent article defines these terms as follows:

> *Currency expansion* is the absolute increase in currency of various forms—chiefly gold, silver, bank notes, government notes, and deposits subject to check. Its opposite is *contraction* of the currency. *Currency inflation*, on the other hand, is relative, that is to say, an expansion of currency *out of proportion* to the increase in the absolute quantities of goods and services exchanged, due allowance being made for variations in offsets of book credits, in the "rapidity of circulation" of currency, and in the frequency with which goods and services are exchanged. The reverse is currency *deflation*—a decline in currency relative to the amount of goods and services exchanged. Currency inflation rarely takes place in exact proportion to currency expansion, or deflation in proportion to contraction, since changes in quantities of goods and services exchanged are constantly taking place. For the same or other causes, the equivalent of currency inflation or deflation, or, one might say, *effective* currency inflation or deflation, may take place without corresponding changes in the quantity of currency. So, after the Civil War, deflation in the United States was accomplished in the main, by "growing up to the currency" rather than by contraction. On the other hand, changes in the currency requirements ordinarily take place slowly; consequently, a marked expansion of currency usually involves currency inflation; and deflation is usually accomplished but slowly if it is unaccompanied by contraction of the currency.[3]

[3] Davis, "World Currency Expansion." Harvard Committee on Economic Research. Vol. II, *p.* 8.

From this it is evident that under the Federal Reserve Act we have had almost no experience in expansion and contraction, though more than enough in inflation and, at present, in deflation. In other words, the establishment of the Federal Reserve System was followed almost immediately by the crisis brought on by the European War, which, owing to governmental needs, brought about an inflation of the currency entirely out of proportion to the ordinary normal business requirements. Likewise, the reaction that has taken place since last year is a process of deflation, again out of all proportion to what is to be expected under normal and regular business conditions. One thing, however, has been proved, and that is that the raising and lowering of the rediscount rates by the Federal Reserve Banks influences very greatly the lending of money by the banks. The question may be raised whether this is not due more to the pressure of the example set by the Federal Reserve Banks than to the mere change of a relatively small percentage in the rediscount rate. But be that as it may, the banks in the country have followed the lead of the Federal Reserve System. Possibly it would have been well if the raising of the rediscount rates after the Armistice had taken place earlier. It is an open secret that the members of the Federal Reserve Board, as well as of the Federal Advisory Council, advocated such a policy long before it was put into effect. The needs of the government, however, intervened, and the necessity for the Treasury to complete its wartime funding operations superseded the dictates of a sound economic policy. Likewise, the successive lowering of the rediscount rate may be due more to the exigencies of politics than of sound banking practice. A recent

pamphlet issued by the Chase National Bank of New York has presented many effective arguments which tend to show that the rediscount rates ought to be determined by the prevailing commercial paper rate, rather than by other considerations.

The peak of Federal Reserve notes in actual circulation was reached on October 22, 1920, at which time these amounted to $3,356,199,000. These notes were first issued in November, 1914, but in the beginning increased very slowly. Even as late as July 1, 1917, the total of Federal Reserve notes outstanding was only $544,412,-775. By July 1, 1918, the amount had, however, more than trebled, amounting at that time to $1,713,074,255. At the time of the Armistice, the amount had increased to $2,562,517,000, and on September 21, of this year, the amount in circulation was still $2,-474,676,000, a reduction, however, of nearly one billion dollars from the highest point. It is to be hoped that this reduction will continue until we reach a point which may be regarded as meeting the normal requirements of business. Until now, banks of the country have acted in a patriotic manner and have generally forced liquidation. It may be feared, however, that such an unselfish policy will not be continued indefinitely if the Federal Reserve Banks, by keeping the rediscount rate below the ordinary commercial rate, make it profitable for their member banks to lend as much as possible. We therefore face the danger of a period of renewed inflation which must not be confounded with normal expansion as defined above.

CURRENCY EXPANSION AND CONTRACTION

As already indicated, the real function of the Federal Reserve System is to make possible the expansion and contraction of the currency, demanded by the continuing changes in business conditions. As the country becomes more densely settled and industrial development continues, there will be need for a gradual permanent expansion of currency which will be met partly by increase in actual metal, but largely by the increase in other forms of currency. Beside such permanent increase, there will be the seasonal expansion and contraction which appears in the statistics of the central banks of all the larger countries. These seasonal changes do not coincide in the various countries. In countries with little agriculture, which are, therefore, compelled to import most of their raw materials, the time of largest expansion is apt to fall at a different time of the year from that in countries which are solely or very largely agricultural. We are in a transition period and what is true today may not be true a few decades hence. At present, however, our period of largest expansion is likely to be at crop-moving time, with contraction taking place after the operations connected with the movement of the crops have been completed.

Probably for the present, the experiences of Canada are most likely to furnish us an example. Canada's banking system is centered in a group of so-called chartered banks, of which there were twenty-four in 1914 and only eighteen in 1920. These banks have over four thousand branches throughout the Dominion, providing for its commercial needs and, in addition, serving as the chief savings institutions of the country. They are subject to comparatively little governmental supervision, although the Canadian Bankers' Association is a public institution whose secretary-treasurer has supervisory power over note issues. The banks are required to

make a monthly report of their condition to the minister of finance.

Canada's currency consists for the most part of bank notes. The banks are authorized by law to issue notes up to the amount of their paid-up unimpaired capital plus any amount they may have on deposit in the central gold reserve. In addition to that, during the crop-moving season they are permitted to issue additional notes up to 15 per cent of their capital and surplus combined, but this additional circulation bears interest at 5 per cent. The privilege of issuing additional circulation may be extended to cover the entire year, and, as a matter of fact, has been so extended during recent years. The chartered banks are not required to carry any special reserves against their circulation, except that they must deposit with the minister of finance, gold or Dominion notes up to 5 per cent of their average circulation. These deposits constitute the bank-note redemption fund. The principal security against circulation, however, is found in the fact that the notes are a first lien on the banks' total assets and in the further fact that the stockholders are subject to double liability on the notes. Bank notes are legal tender throughout the Dominion. It is to the interest of each bank to maintain as high a circulation of its own notes as the law permits. Each bank will, therefore, pay its customers over its counter only notes issued by itself. When the community's need for circulation contracts, notes will be deposited in the banks and the banks will return to the issuing banks the notes in their possession, and thus reduce the outstanding volume of circulation. In other words, since the notes are obtainable from any bank on demand and on the other hand can always be deposited with the banks as soon as they are not needed, the circulation in the hands of the public does not exceed the requirements of trade and industry.[4]

The Canadian statistics for the years immediately preceding the War and those since the War are given in next column.

[4] *Federal Reserve Bulletin.* December 1919, p. 1142.

CIRCULATION OF BANK NOTES IN CANADA

	1911	1912	1913	1919	1920	1921
January	77,110,971	88,065,521	94,575,644	226,385,506	237,269,805	229,608,213
February	79,927,785	88,920,598	97,206,713	210,894,809	223,979,666	211,640,296
March	81,938,753	93,819,333	102,202,047	216,529,576	231,220,770	215,931,035
April	83,647,088	95,145,371	98,100,111	223,763,426	243,226,193	216,262,907
May	81,862,218	93,819,333	102,997,936	219,287,788	235,085,179	207,359,887
June	88,618,699	102,011,848	105,697,629	222,712,991	238,088,555	207,056,687
July	89,018,079	95,827,534	99,143,411	223,662,648	240,833,686	203,134,777
August	90,630,530	101,501,270	105,806,914	223,454,556	237,697,647	197,461,372
September	97,197,176	104,334,287	111,075,519	229,532,356	242,988,866	....
October	105,855,021	110,696,877	118,234,359	242,509,573	252,882,760	....
November	101,943,056	115,473,098	119,497,321	248,073,385	253,576,534	....
December	102,037,305	110,048,357	108,646,425	247,611,079	246,859,667	....

It will be noticed that the circulation increases very largely in the last months of each year and decreases at the beginning of the year. This has been true even since the War, in spite of the fact that Canada has had a period of inflation similar to our own. It is also interesting to note in this table that naturally there has been a very large increase of bank notes since the War, and that the contraction which has taken place has by no means been sufficient to bring the total back to that of the pre-war period. Probably this is due in Canada, as in our own country, to the fact that part of the apparent inflation is really a natural expansion due to general commercial development within the country.

In the case of the European countries, on the other hand, the inflation has been much more severe, culminating in Austria Hungary, where the note issues of the central banks increased twenty-fold. Everywhere the elasticity of the currency provided by central banking institutions has prevented the most severe financial panics, though, of course, nowhere could it prevent commercial crises due to the general situation.

PROPER POLICY AS TO REDISCOUNT RATES

To summarize: Bankers have had too little experience to state definitely how the expansion and contraction of the currency under the Federal Reserve System is going to work under normal conditions. The unusual stress to which the Federal Reserve System was subjected at the very outset must make bankers and business men everywhere realize that the System, if properly managed and kept free from politics, ought to have no difficulty whatsoever in functioning satisfactorily during normal and less trying years. It will be necessary, however, for the Federal Reserve Banks to educate the bankers of the country gradually to a conception that the Federal Reserve Banks are to be regarded strictly, as their name implies, as a last resort, and that the rediscount privileges are to be used, therefore, sparingly and only in times of stress and strain. There is a danger that, owing to the peculiar conditions under which the System began, its reserve function may have been forgotten. If the Federal Reserve Banks will have the courage to keep the rediscount rates above the prevailing market rate, banks and bankers will gradually learn to make use of their rediscount privileges only in case of real necessity.

This may cut down the large profits which the Federal Reserve Banks have earned in recent years but, after all, the reason for the establishment of these banks was not to earn money either for themselves or for the government, but to prevent losses to the business and banking communities of the country. Every true well-wisher of the Federal Reserve System will desire that in course of time it limit itself to the purposes for which it was created, that it may be kept out of politics, and that it may not be used as a panacea for all financial evils threatening the country as a whole, or any class or section thereof. Its real, primary and sole function is, and ought to be, to provide an elastic currency which may prevent unnecessary financial panics of which we have experienced too many in the past. As one who had much to do with the discussions preceding its creation and who acted as a fatherly adviser during the years of its infancy, the writer expresses the wish: *vivat, crescat, floreat.*